

XIX. On Hawaiian Ophioninae (Hymenoptera, Fam. Ichneumonidae). By R. C. L. PERKINS, M.A., D.Sc., F.E.S.

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IN 1883 two species of Ophionines were described as belonging to the genus *Ophion* by Cameron, from four examples sent to him by Blackburn from the Hawaiian islands. These were treated as representing male and female of each species. In 1912 Morley adopted the same view as to the sexes. The four Blackburnian examples, however, represent four quite distinct species. Blackburn himself retained specimens that he considered identical with those sent to Cameron for description, and these specimens are now in my possession. The ♀ labelled *nigricans* is the same species as Cameron's described ♀ and the ♂ is identical with the ♂ type. Of the other species, *Ophion lineatus*, Cam., the ♂ and ♀ retained by Blackburn are correctly sexed and belong to the very distinct species subsequently named *Enicospilus molokaiensis* by Ashmead. Only the second example (not marked as the type) of Cameron's pair belongs to this species. In the "Fauna Hawaiiensis," vol. i, p. 341 *et seq.*, Ashmead dealt with all the known Hawaiian genera of Ophionines and described numerous species. He failed to recognise Cameron's *Ophion lineatus* in the large collection that he examined, but identified as *Ophion nigricans*, Cam., a long series of examples of a very different insect in no way related to Cameron's. It is, of course, no wonder that Ashmead should have failed to recognise Cameron's *O. lineatus*, since it is entirely misplaced generically, being an *Enicospilus* or *Henicospilus*, as some write it. On the other hand, his treatment of *Ophion nigricans* is extraordinary. In his "Classification of Genera of Ichneumons," published a year before the "Fauna Hawaiiensis" referred to above, and with the material collected by me before him, containing a great series of his *O. nigricans*, he constructed a new genus *Pleuroneurophion* for this same *nigricans*, on a single specimen collected by Koebele, while all the other examples were considered identical with Cameron's *Ophion*. Ash-

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mead did not understand the specific characters of the difficult Hawaiian *Enicospilus*, and subsequently I myself described several species which are mere local forms or varieties of his. The names of these may well be dropped unless one proposes to create numbers of new names for these very variable and difficult insects. On account of the mixture of species under one name Ashmead's descriptions are impossible for correct identifications, as a study of his types and the series of specimens in the British Museum prove. Thus the eight examples under *E. maui-cola*, Ashm., clearly belong to three distinct species. Most unfortunately Ashmead, when describing the parasitic Hymenoptera, applied the names of particular islands, on which they were captured, to various species (even though they were then known to be widely distributed), but did not choose his types to suit the specific names. Thus the type of *E. maui-cola* is from Kilauea, Hawaii, and there is no Maui example in the British Museum series; that of *E. kaalae* is from Kauai and not from Mt. Kaala on Oahu, and so on.

Morley's work on the Ophionines does not throw much light on the Hawaiian species, as he does not include the peculiar genera characterised by Ashmead, the types of which have long been in the British Museum. *Ophion nigricans*, Cam., he retains in *Ophion*, though it is obviously an *Enicospilus* with the spot of the discocubital cell very small and faint or transparent. The variability of these spots and of the propodeal carina is of the commonest occurrence in various Hawaiian species. In the example of *O. nigricans*, retained by Blackburn, the spot is quite distinct and dark. Ashmead described the large rufescent form of this species as *E. castaneus*, but all sorts of parti-coloured varieties between this form and one entirely blackish-fuscous are known, and the variation in the propodeal carina and the discocubital spot occurs in all. Both may be seen in all stages of degeneration. Probably the species parasitises hosts of very different size, like other Hawaiian *Enicospilus*, and rufescent and black forms pair together.

The hosts of the Hawaiian Ophionini are but little known, though the cocoons are often found in numbers when one is collecting Coleoptera. *Enicospilus* is known to attack Noctuidae and Geometridae, and *Athyreodon* is bred from Pyralidae, while a large number of immature

caterpillars of *Deilephila blackburni* was once found on the dry fore-hills behind Honolulu, all of them parasitised by what, no doubt, was a species of *Enicospilus*, though the insects were not bred.

The following table of species has been prepared after the examination of a very large amount of material, including the type set of specimens contained in the British Museum. Excepting very abnormal aberrations, I believe all the species known to me may be distinguished by it, and characters that are either noteworthy for their variation or of use for specific separation are added in brackets.

### TABLE OF SPECIES OF *Enicospilus*.

1. (30) First or basal abscissa of radius generally notably thickened between the base and middle, and a glabrous area always present beneath the basal part of the radius; mesonotum normally convex.
2. (5) First recurrent nervure forming a distinct angle at its meeting with the cubitus, and usually a little thickened or prominent at that point; hypopygium in the ♀ very strongly prominent.
3. (4) General colour yellowish or reddish ferruginous, varying in depth; stigma largely yellow or testaceous; chitinous spot in the discocubital cell always well developed, pyriform or with an apical prolongation.

(Size very variable, ♀ from 12 to 19 mm.; transverse median nervure of front wings interstitial with the basal or not far separated from it.)

*E. molokaiensis*, Ashm.

4. (3) Thorax and abdomen almost wholly black or dark fuscous, the legs also dark, except some of the tarsi; stigma dark.  
(Mesonotum rather distinctly shining, more or less rufescent at the sides in front; scutellum very finely and not closely punctured; propodeum much smoother in front than behind, and without a transverse carina; wings smoky-hyaline except the clear glabrous area; 3rd and 4th abdominal segments brownish-tinged; chitinous spot of discocubital cell pyriform.)

*E. melanochromus*, sp. nov.

5. (2) First recurrent nervure forming a simple curve with the cubitus and not angulate; hypopygium of ♀ only strongly prominent in the next following species (*kaalae*, Ashm.)

6. (7) Thorax wholly black (or at most a little reddish behind the head) ♂ with the basal abdominal segment dark on the basal portion, rarely wholly black, its apex (usually) as well as the 2nd, 3rd, 4th and often the 5th segments rufous, the apical segments black or blackish; ♀ also with the intermediate segments red, the hypopygium very strongly exerted, so that in lateral view the abdomen becomes extremely wide beyond the fifth dorsal segment.

(♂ ♀ with one distinct, but not large, chitinous spot in the discocubital cell; propodeum in the ♀ with a distinct transverse raised line or carina, sometimes as strong in the ♂, or totally absent in the latter sex; carinae of scutellum seen from in front strongly convergent behind; antennae of ♂ extending beyond the tips of the spread wings for a distance as great as half the wing-length.) . . . . . *E. kaalae*, Ashm.

7. (6) Coloration not as above; hypopygium of ♀ not unusually prominent.
8. (11) Discocubital cell with two very distinct chitinous spots and the thorax, as well as the legs, is conspicuously in part or wholly pale, yellowish or ferruginous. If the thorax and coxae are dark, then the scutellum is largely yellow and the mesonotum has definite pale lateral markings.
9. (10) Mesosternum and propodeum reddish or ferruginous, at most somewhat dusky or suffused with fuscous.

*E. longicornis*, Ashm.

10. (9) Mesosternum and at least most of the propodeum black.

*E. tyrannus*, P.

11. (8) Discocubital cell with one chitinous spot or none; or if with two then the coloration of the insect is quite unlike the preceding, or the second is so faint as to be scarcely perceptible.

12. (13) Thorax mostly yellow or yellowish, with a conspicuous median dark band on the mesonotum extending back to the middle; propodeum behind the transverse carina largely or mostly black; legs entirely pale, yellowish or testaceous; spot of the discocubital cell large, subtriangular or pyriform and continued all round the lower margin of the glabrous area as a faint yellow streak.

*E. nigrolineatus*, Ashm.

13. (12) Insects without these characters.

14. (15) Legs yellow as in *nigrolineatus*, but with the apical half (or nearly) of all the femora black; mesonotum with the sutures and posterior part yellow, or pale.

(Face below the antennae nearly wholly ochreous; scutellum black between the carinae; propodeum above black, yellow at the base laterally; abdomen black or dark fuscous with a mediodorsal pale line extending back from the second segment; discocubital cell with one large subtriangular chitinous spot, not drawn out or produced apically; allied to *nigro-lineatus*.) . . . . . *E. variegateus*, Ashm.

15. (14) Legs and mesonotum not coloured as above.

16. (17) Spot of discocubital cell large, the glabrous area above it unusually small, not much larger than this spot, which underlies the whole of the apical portion of the glabrous area (♀).

(Thorax mostly black, the scutellum convex, rugulose-punctate like some large examples of *dimidiatus*, and shining between the punctures; carina of propodeum strong, the latter being notably smoother in front than behind, the sculpture being much finer; two basal abdominal segments black or dark, the rest brownish-ferruginous.) . . . . . *E. waimeae*, Ashm.

17. (16) Discocubital cell without the above characters.

18. (25) Scutellum behind the transverse impression notably transversely convex, sometimes more or less shining, the puncturation sometimes close, and rather deep and distinct, sometimes very fine, feeble or remote. In most species the propodeum in front is conspicuously smoother than the posterior portion and often more or less shining.

19. (20) A black species with dark legs, the whole face beneath the antennae dark, except for an indistinct paler line along the eye-margins, the labrum piceous; propodeum with a very strong transverse carina, much smoother in front of this than behind, the anterior area with somewhat shining surface under a strong lens; discocubital cell with a distinct dark chitinous spot; ♀ only known.

(Scutellum rather strongly and distinctly punctured, the spaces between the punctures somewhat shining; face very wide, the eyes being strongly rounded outwardly; 2nd dorsal segment unusually strongly and densely punctured compared with allied species.

*E. funereus*, sp. nov.

20. (19) Species sometimes largely ferruginous or with the face beneath the antennae of this colour; if black or dark insects, the labrum is conspicuously pale and the whitish orbital lines are distinct down to the cheeks.



21. (22) Blackish or dark fuscous species (rarely with parts of the thorax rufescent) the clypeus, except for the orbital pale line, the legs for the most part, including the coxae, black or dark-coloured.

(Thorax usually nearly wholly dark, in the type the mesonotum is reddish in front, the scutellum rufescent, as also the propodeum in front of the median tubercle. Scutellum under a strong lens with very fine surface rugulosity and fine shallow punctures, remote and sometimes almost wanting; propodeum normally with the transverse carina represented only by a median tubercle or short curved line, very rarely extending to the sides, notably smooth in front of the tubercle or carina; tarsi, tibiae, and antennae or some of these sometimes pale in large examples from Hawaii, dark in equally large ones from Oahu, where a diminutive form *dimidiatus*, P., is dominant; wings sometimes unusually deeply infusate and with the discocubital chitinous spot obsolescent (*capnodes*, P., from Hawaii), antennae very long, even in the ♀ far surpassing the apex of the spread wings.) . . . . . *E. mauicola*, Ashm.

22. (21) Ferruginous species, or if the thorax or abdomen or both are largely dark fuscous or blackish, the legs for the most part or entirely and the clypeus remain red or ferruginous.
23. (24) Scutellum very finely and feebly punctured, the punctures remote, the surface more or less microscopically rugulose, often somewhat shining; chitinous spot of the discocubital cell nearly always distinct (absent in 2 per cent. of examples examined).

(Face very wide across the eyes, these being very strongly rounded outwardly, the cheeks short; antennae in both sexes extending far beyond the apices of the spread wings. In the ♀ the carina of the propodeum is rarely complete in examples from Hawaii, sometimes altogether wanting; often represented by a median tubercle, as is normally the case in the ♂; in front of the tubercle or carina the propodeum is more or less smooth and often somewhat shining; neuration variable, the basal nervure sometimes meeting the transverse median, sometimes well separated from it, discocubital nervure varying in curvature so that the discoidal cell beneath it varies in shape.)

*E. lineatus*, Cam.

24. (23) Scutellum comparatively strongly and often closely o

subrugosely punctured; discocubital cell without a chitinous spot, at the most with feeble traces of one, as a hyaline thickening.

(Thorax, legs and abdomen dull reddish or ferruginous, the thorax sometimes, and the abdominal segments behind the two or three basal ones usually, suffused with brown or infusate; yellow colour of the inner orbits only continued down into the *sinus* of the eyes, not distinct below this; labrum yellow, distinctly pale compared with the rufescent clypeus; propodeum in the ♂ with the carina usually represented only by a median tubercle, sometimes distinct, as in the ♀; sculpture in front of the tubercle or carina similar to and continuing that behind it, the surface sometimes nearly smooth at the extreme front.)

*E. ashmeadi*, sp. nov.

25. (18) Scutellum flatter above, usually very little convex transversely behind the anterior fossa, always dull and very densely, shallowly punctured or rugose, the lateral carinae more strongly raised; propodeum in front of the transverse carina (or the position occupied by this, when present, should it be effaced) dull, densely sculptured, much as behind the carina, but less coarsely; the carinae of the scutellum, viewed from in front, usually much less strongly convergent posteriorly than in most of the preceding species.

26. (27) Hyaline glabrous area of the discocubital cell abnormally narrow, its lower side somewhat straight, not well rounded beneath like other species, without any chitinous spot, but usually there is a hardly perceptible, faintly yellow line just beneath the lower margin of the area.

(A dull reddish or ferruginous insect, at most with the apical abdominal segments and parts of the thorax more or less suffused with fuscous; the whole face beneath the antennae yellowish-white or cream-coloured, except for a median longitudinal area beneath the frontal tubercle, the foveae of the clypeal sutures and a spot, sometimes obscure, at the middle of the apical margin of the clypeus; propodeum of ♀ with a transverse carina, sometimes obscure and then best seen, when viewed from behind, in the ♂ usually without a trace of the carina, very densely sculptured before and behind the carina, the sculpture in front rather finer. Eyes strongly rounded outwardly, the

head wide, the antennae in the ♀ reaching beyond the apex of the spread wings.) . . . *E. bellator*, sp. nov.

27. (26) Hyaline glabrous area of discocubital cell normal, well rounded below, often with a distinct chitinous spot; clypeus not yellowish-white or cream-coloured except along the orbits. Insects sometimes ferruginous like the preceding, sometimes blackish or dark fuscous or parti-coloured.

28. (29) A usually nearly constant species in appearance, nearly black or dark blackish-fuscous, the discocubital cell always with two chitinous spots, the outer one small or minute and sometimes pallid or translucent; antennae of ♀ always extending far beyond the apices of the spread wings; face in both sexes wider than in the following, the eyes more strongly rounded outwardly.

(Second and following abdominal segments, or some of these, obscurely brownish or reddish tinged; Kauai specimens have the antennae and more or less of the legs pale, yellowish-brown.) . . . *E. dispilus*, P.

29. (28) A very variable species ferruginous or castaneous like *E. bellator* or blackish like *dispilus* or parti-coloured and variegate with red and dark fuscous; discocubital cell with a distinct chitinous spot or with this faint or totally wanting, rarely with a minute pallid second spot present. Face narrower than in any other species, the eyes less rounded outwardly and the antennae of ♀ reach only to the apex of the spread wings; carina of propodeum highly variable, usually very distinct and well-developed in the ♀, though sometimes (especially in undersized examples) wanting, in the ♂ often faint or altogether absent, but sometimes strongly developed as in the ♀.

(Pale orbital markings almost always widened beneath the *sinus* of the eyes.) . . . *E. castaneus*, Ashm.

30. (1) First or basal abscissa of the radius slightly and evenly thickened basally, without the somewhat irregular or sub-sinuate thickening observed in nearly all other species; no glabrous hyaline area beneath the radius, but the hairs are sparser in the part usually occupied by this area. Mesonotum somewhat strongly compressed at the sides, in such a way that the middle third of its width appears elevated.

(Thorax dorsally black, the scutellum and median elevation of the mesonotum red; sides of thorax reddish more or less suffused; basal abdominal seg-



ment nearly black, its apex and the rest of the abdomen brown; face apparently without whitish orbital markings, the space between the ocelli dull and densely, microscopically granular, unlike any other species. Wings clear light-fuscous; propodeum shallowly rugose-punctate to the base and without a carina; scutellum dull and very densely sculptured; discocubital nervure not angulate but rounded at its highest point, sinuated. The ♀ is unknown, as is the range of variation.) . . . . *E. pseudonymus*, sp. nov.

The other genera of Ophionines contain few species, the separation of which presents no difficulties at present, but the genera themselves are of extreme interest and contain the most interesting forms of the tribe Ophionini that are yet known. They may be distinguished by the following table. I have not seen the typical species of *Eremotylus*, Först., and I think that Ashmead is wrong in attributing the one variable Hawaiian species to it.

#### TABLE OF HAWAIIAN GENERA OF *Ophionini*.

1. (6) Transverse median nervure in the hind-wings angulated far below the middle, at  $\frac{2}{3}$  of its length from the upper extremity at least or even much lower than this. Discocubital cell (except in one species of *Enicospilus*) with a distinct glabrous area beneath the radius basally.
2. (5) Abdomen of normal shape not very long and in side view the 5th segment is not strongly elongate.
3. (4) Cubitus and recurrent nervure distinct, forming a distinct angle at their meeting, the cubitus continued basally beyond this point to form a conspicuous thick projection, the discoidal cell consequently being conspicuously pentagonal; ♀ with ovipositor and sheaths prominently exerted behind the abdomen.

(Front wings with a glabrous area and usually with a minute, translucent chitinous spot.)

*Pleuroneurophion*, Ashm.

4. (3) Cubitus and recurrent nervure usually forming a curve at their meeting, rarely an angle; in the latter case without a large thickened projection at the angulation and with the lower and upper sides of the discoidal cell subparallel, instead of strongly divergent basally as in the preceding; ♀ with normal ovipositor, not exerted behind the apex of the abdomen dorsally. . . . *Enicospilus*, Auct.

5. (2) Abdomen very elongate, and slender in lateral aspect, the 5th segment, so viewed, being strongly elongate.

(Cheeks very short, the eyes nearly reaching the mandibles, the ocelli large, the rims of the outer ones almost touching the eyes, radius conspicuously thickened basally, with distinct glabrous area beneath, transverse median and basal nervures usually meeting in front wings, sometimes a little separated; propodeum declivous from the front margin or almost so, widely flattened or slightly impressed almost from base to apex, and with no transverse carina.)

*Eremotylodes*, g. nov.

6. (1) Transverse median nervure in the hind-wings angulated near to or above or not greatly below the middle, never at  $\frac{2}{3}$  of the distance from its upper extremity to the lower.
7. (10) Ocelli large or moderately large, the lateral ones never more distant from the nearest point of the eye-margins than the length of the ocellar diameter; cheeks between the eyes and mandibles very short inwardly.
8. (9) ♀ of normal Ophionine shape and structure, the ovipositor and sheaths not exerted behind the abdomen; hind part of the thorax in dorsal aspect with the sides only slightly rounded. . . . . *Athyreodon*, Ashm.
9. (8) ♀ with the ovipositor and sheaths extended far behind the tip of the abdomen; hind part of the thorax strongly rounded at the sides owing to the convexity of the metapleura. . . . . *Pycnophion*, Ashm.
10. (7) Ocelli placed medially on the vertex, the outer ones far removed from the eye-margins; cheeks extremely long, the eyes far removed from the mandibular articulation; abdomen unusually short and wide.

*Banchogastra*, Ashm.

Ashmead characterised the endemic Hawaiian genera in his "Classification of the Ichneumon Flies," but his table of genera (pp. 86, 87) is very faulty, though the genera are perfectly valid. His figures in the "Fauna Hawaiiensis" do not always agree with his descriptions and are certainly incorrect in details.

Excluding *Pleuroneurophion*, he divides the genera according to whether the "transverse median nervure in hind-wings is broken above the middle" or "at or above the middle," the "above" in the latter case being clearly a *lapsus* for *below*.

*Athyreodon* belongs to the former division, but on examining a dozen Hawaiian specimens I find that in four this nervure is angulated at the middle, in four a little above the middle and in one only greatly above the middle, as he has figured it.

In the other division in *Pycnophion* the transverse median nervure is said to be "angularly broken at or near the middle but is figured as angulated far below the middle; *Banchogastra* as broken "much below the middle" but it is figured as being angulated much nearer the middle than in *Pycnophion* and the angle is not "a right angle." Of the specimens of *Banchogastra* that I have examined, the transverse median is angulated in one example at about the middle, in the others well below this, but always before the lower third of its length.

*Pycnophion* is said to have the ovipositor as long as the body and the propodeum with a transverse carina, but one of the species is described as without a carina, and with a much shorter ovipositor. Similarly *Eremotylus* is placed under the genera with "one or two transverse carinae" on the propodeum, while his Hawaiian species has none.

His use of very slight differences in the position of the extremity of the first recurrent nervure with regard to the "discoïdal" nervure for defining the genera is worthless. It is not often a constant character in the genera under consideration nor even a reliable specific character in some species.

In the mass of Hawaiian material that I have examined in *Pleuroneurophion*, *Enicospilus* and *Eremotylus* the transverse median nervure is always angulated lower down than in any of the other genera, and to this extent the point of angulation is useful, especially as the genera named, excepting one remarkable species of *Enicospilus*, all have a glabrous area beneath the basal part of the generally thickened radius, which area is wanting in the others.

Whether the Hawaiian *Athyreodon* is congeneric with the type species (which had only a MS. specific name) must remain doubtful, until more important characters than those given by Ashmead have been examined. *Pleuroneurophion* is clearly related to some of the Hawaiian *Enicospilus* and not to *Ophion*. Morley in his table of Ophionines places *Ophion* and *Enicospilus* next to one another as having the "nervellus intercepted below centre,"

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etc., though in all the species of the former that I have seen the angulation of the transverse median nervure of the hind-wings is in an entirely different position from that of *Enicospilus*. In the figure by Mr. Rupert Stenton in Morley's work the angulation is figured as being far *above* the middle.

The variability of many of the Hawaiian Ophionini is so excessive, that if similar variation occurs in other tropical countries, the group may well prove one of the most difficult of entomological studies. In *Enicospilus* these variations have to some extent been alluded to in the table of species and for the tribe, as represented in Hawaii they may be classed as follows :—

- (1) Size extremely variable, so that smaller individuals of a species (of course of the same sex) may be from  $\frac{1}{3}$  to  $\frac{1}{2}$  the size of the largest. This variability occurs in species of *Enicospilus*, *Athyreodon* and *Eremotylodes* and possibly in other genera.
- (2) Colour often very variable, so much so that possibly nearly black forms of all the ferruginous *Enicospilus* and ferruginous ones of those usually black may occur. It is possible that Ashmead's *E. mauicola* (*dimidiatus*, P.) is only a melanochroic form of *E. lineatus*, Cam. In fact the actual type of the former is of a somewhat intermediate character and does not agree with his description. Possibly *Eremotylodes orbitalis* may also have a pale form as in some examples the thorax is red and all the legs pale, while others are blackish-fuscous insects with dark legs, intermediates occurring.
- (3) Neururation very variable in detail, even in points considered of importance (though much overrated in this respect, both in parasitic and aculeate Hymenoptera). This variation is sufficiently alluded to above.
- (4) Chitinous thickened spots of the front-wings very variable in some species, well-developed in some examples of a single species or totally absent or in all stages of degeneration in other specimens. The glabrous area itself is more constant in its character.
- (5) Sculpture variable in many species, especially the propodeal transverse carina. Sometimes this is normally present in one sex, absent in the other, but examples of these are found in which the conditions are reversed. In other cases the carina may be seen in all stages of obsolescence, from strong and complete to total absence.
- (6) Dorsal fovea of 1st abdominal segment very variable, obsolete

or distinct in examples of a single species, and varying in form.

Very useful and comparatively constant characters in some of the most difficult species are found in the shape of the head, length of the cheeks and of the antennae, and in the sculpture and form of the dorsal surface of the raised scutellum.

Cameron's typical specimens, now in the British Museum, need to be carefully relaxed and cleaned, two of them indeed are in a mutilated or fragmentary condition, and but for the fact that they are the types, all would be better discarded from a collection.

*Pleuroneurophion ferrugineus*, sp. nov.

Colour ferruginous (like normal *Enicospilus molokaiensis*) only the apical joints of the tarsi, mandibular teeth, etc., dark. Mesonotum not shining, hardly visibly sculptured, the scutellum with excessively minute surface rugulosity. Propodeum with short white hairs, finely rugulose, without a transverse carina. Neuration dark, wings with yellowish tinge. Size of *P. hawaiiensis*.

*Hab.* Maui, Haleakala. Probably common, as it would be overlooked for the excessively abundant *Enicospilus molokaiensis* by any one not wanting the latter.

The following is a list of all the Hawaiian species of *Enicospilus* as here described, with synonymy and localities, as at present known. I am only able to use the localities given by Ashmead when I have seen the actual specimens. No doubt many of the species either in typical form or as slight varieties have a wider distribution than that given.

1. *E. molokaiensis*, Ashm. Common on all the islands.
2. *E. melanochromus*, sp. nov. Maui.
3. *E. kaalae*, Ashm. Kauai and Oahu.  
(=*semirufus*, Perkins.)
4. *E. longicornis*, Ashm. Hawaii.
5. *E. tyrannus*, Perkins. Molokai.
6. *E. nigrolineatus*, Ashm. All the islands.
7. *E. variegatus*, Ashm. Hawaii.
8. *E. bellator*, Perkins. Hawaii, Molokai and Oahu  
and probably the other islands.
9. *E. funereus*, sp. nov. Maui.
10. *E. waimeae*, Ashm. Kauai and (sec. Ashmead)  
Hawaii.



11. *E. mauicola*, Ashm. Hawaii, Oahu and probably other islands.  
(=*dimidiatus* and *capnodes*. Perkins.)
12. *E. lineatus*, Cam. Hawaii, Maui, Lanai, Oahu.  
(=*henshawi*. Ashm.)
13. *E. ashmeadi*, sp. nov. Hawaii.
14. *E. dispilus*, Perkins. Kauai, Oahu.
15. *E. castaneus*, Ashm. Hawaii, Molokai, Lanai.  
(=*nigricans*, Cam., nec Ruthe = *nigritulus*. Morlev.)
16. *E. pseudonymus*, sp. nov. Maui.

The Bibliography (so far as it is of any importance) concerning the Hawaiian Ophionini is not extensive.

1883. Cameron, Tr. Ent. Soc. 1883, pp. 192, 193.  
*Ophion lineatus* and *nigricans* described.
1900. Ashmead, Proc. U.S. Nat. Mus., xxiii, pp. 86-87.  
*Pleuroneurophion*, n. gen., *Banchogastra*, n. g., *Pycnophion*, n. gen., *Athyreodon*, n. gen., *Enicospilus*, *Ophion* and *Eremotylus*.
1901. Ashmead, "Fauna Hawaiiensis," I, pp. 341-350.  
*Ophion nigricans*, Cam., and *lineatus*, Cam., pp. 341 and 342; *Pleuroneurophion hawaiiensis*, sp. n., p. 342; *Athyreodon hawaiiensis*, sp. n., p. 343; *Banchogastra nigra*, sp. n., p. 343; *Pycnophion kauaiensis* and *molokaiensis*, spp. n., p. 344; *Eremotylus orbitalis*, sp. nov., p. 345; *Enicospilus mauicola* and *kaalae*, spp. n., p. 347; *E. waimeae. variegatus* and *nigrolineatus*, spp. n., p. 348; *E. castaneus*, *henshawi*, and *molokaiensis*, spp. n., p. 349; *E. longicornis*, sp. n., p. 350.
1902. Perkins, Tr. Ent. Soc. London, pp. 141-143.  
*Abanchogastra*, gen. nov., *debilis*, sp. nov., p. 141; *Enicospilus semirufus*, sp. n., p. 142; *dispilus* and *dimidiatus*, spp. n., p. 143.
1910. Perkins, "Fauna Hawaiiensis," II, pp. 678-680.  
*Enicospilus kaalae*, Ashm. (*semirufus*, P. a synonym) and *E. tyrannus*, sp. n., p. 57; *E. capnodes*, sp. n., p. 679; *Athyreodon*, Ashm. (*Abanchogastra*, P. a synonym of), p. 679; *Banchogastra vitreipennis* and *Pycnophion fuscipennis*, spp. n., p. 680. (Written a few years before publication.)

1912. Morley, "Revision of Ichneumonidae," Pt. I, Ophionides and Metopiides. A British Museum Publication.

*Henicospilus*, *dispilus*, P., *lineatus*, Cam., *dimidiatus*, P., *semirufus*, P., included in table of Australasian species, pp. 48, 49. *H. lineatus*, Cam., p. 52. *Ophion nigrifulus*, n. nom., for *O. nigricans*, Cam.

1913. Perkins, "Fauna Hawaiiensis," Introduction to, pp. cix, cx.

General remarks on Hawaiian Ophioninae (written three or four years before publication).